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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Yusuke Konagai

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ROSSI, KIMMS & McDOWELL LLP.
20609 Gordon Park Square, Suite 150
Ashburn, VA 20147

EXAMINER

PAUL, DISLER

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/584,672	Applicant(s) KONAGAI ET AL.	
	Examiner DISLER PAUL	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Argument

The applicant's translation of the foreign priority document has been analyzed and accepted and thus, it overcame the previous office action rejection. However, with further consideration, the concept wherein "having a directivity control circuit for controlling a delay setting for each of the delay circuits based on a desired focal position of a sound wave beam to be directed to and a position of each of the speaker units" have been analyzed and rejected in view Yoshino et al. (US 7054448 B2).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1; 4; 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshino et al. (US 7054448 B2).

Re claim 1, Yoshino et al. disclose of an audio output apparatus comprising: a measuring unit that measures levels of a plurality of input sound signals (fig.5B (12a); col.8 line 10-17/measure the plurality of input sound signals) and a sound level adjusting unit that adjusts

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gains based on the levels measured by the measuring unit so that the sound signals have an equal magnitudes (fig.5B (12b); col.8 line 34-46/ to adjust the gain level so that the channel become equal to each other) and an array speaker unit having a plurality of speaker units and a delay circuit for each of the adjusted sound signals (fig.3 (DLY1-DLY8, FL-SBL); col.5 line 5-10; col.6 line 20-25) and a directivity control circuit for controlling a delay setting for each of the delay circuits based on a desired focal position of a sound wave beam to be directed to and a position of each of the speaker units (fig.5C; col.9 line 31-45/control circuit so as to delay the channel signals so that they may simultaneously focus the sound wave beam toward the listener and inherently such delay is based on the position of the speaker, since the audio is delay partly based on the speaker position to the listener) and wherein each of the speaker units receives a predetermined set delay from one of the delay circuits to emit a plurality of sounds from the speaker units in accordance with the adjusted sound signals in different directivities (fig.5C; col.9 line 35-40/sound is delayed according to the adjusted signal in different directivity as per speaker location).

Similarly Re claim 4 which cite the same limitation as claim 1 has been analyzed and rejected accordingly.

Re claim 6, Yoshino et al. disclosed of an audio output apparatus comprising: a frequency control unit that limits or emphasizes frequency bands of a plurality of input sound signals (fig.5A; col.7 line 20-37) and an array speaker unit having a plurality of speaker units and a delay circuit for each of the sound signals controlled by the frequency control unit (fig.3 (DLY1-DLY8, FL-SBL); col.5 line 5-10; col.6 line 20-25), an a directivity control circuit for controlling a delay setting for each of the delay circuits based on a desired focal position of a

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sound wave beam to be directed to and a position of each of the speaker units (fig.5C; col.9 line 31-45/control circuit so as to delay the channel signals so that they may simultaneously focus the sound wave beam toward the listener and inherently such delay is based on the position of the speaker, since the audio is delay partly based on the speaker position to the listener) wherein each of the speaker units receives a set delay from one of the delay circuits to emit a plurality of sounds from the speaker units in accordance with the sound signals controlled by the frequency control unit in different directivities (fig.5C; fig.3; col.9 line 35-40/sound is delayed according to the frequency signal).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshino et al. (US 7054448 B2) and Yeap (US 4118601).

Re claim 2, the audio output apparatus according to claim 1, wherein having the measuring the input signal to have equal magnitude as desired (col.8 line 8-10 & 17-22; fig.5B), however, Yoshino et al. fail to teach of the measuring unit separates the sound signals into a plurality of frequency bands to measure levels, and the sound level adjusting unit assigns weights on the measured levels of the frequency bands with a predetermined weight for each of the frequency bands. However, Yeap disclose of a system wherein the measuring

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unit separates the sound signals into a plurality of frequency bands to measure levels, and the sound level adjusting unit assigns weights on the measured levels of the frequency bands with a predetermined weight for each of the frequency bands (fig.2 (40,42); col.4 line 1-16/ all the channels (a,b,c)with the equalizers} are to be adjusted at same weight with individualized frequency bands) for the purpose of creating desired sound perception of room effect. Thus, it would have been obvious for one of the ordinary skill in the art at the time of the invention to have incorporated the measuring unit separates the sound signals into a plurality of frequency bands to measure levels, and the sound level adjusting unit assigns weights on the measured levels of the frequency bands with a predetermined weight for each of the frequency bands for the purpose of creating desired sound perception of room effect.

Thus, the combined teaching of Yoshino et al. and Yeap as a whole, as modified disclose the adjustment adjusts the gains based on the weighted levels of the individual frequency bands so that the sound signals are in equal magnitudes (Yoshino, col.8 line 35-46/adjust so as to have equal magnitude).

Re claim 3, the audio output apparatus according to claim 1, wherein having the measuring the input signal to have equal magnitude as desired (col.8 line 8-10 & 17-22; fig.5B), However, Yoshino et al. fail to disclose of the measuring unit separates the sound signals into a plurality of frequency bands to measure levels. However, Yeap disclose of a system wherein the measuring unit separates the sound signals into a plurality of frequency bands to measure levels (fig.2 (40,42); col.4 line 1-16/ all the channels (a,b,c)with the equalizers) for the purpose of creating desired sound perception of room effect. Thus, it would have been obvious for one of the ordinary skill in the art at the time of the invention to have

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incorporated the measuring unit separates the sound signals into a plurality of frequency bands to measure levels for the purpose of creating desired sound perception of room effect.

Thus, the combined teaching of Yoshino et al. and Yeap as a whole, as modified disclose of the sound level adjusting unit adjusts gains so that the sound signals are made to have equal magnitudes for each of the frequency bands based on the measured levels of the respective frequency bands (Yoshino, col.8 line 35-46/adjust so as to have equal magnitude).

3. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshino et al. (US 7054448 B2) and Grimani (US 6,498,852 B2).

Re **claim** 5, Yoshino disclose of the audio output apparatus comprising: a measuring unit that measures levels of a plurality of input sound signals and adjusting the measured level signals (fig.5B (12b); col.8 line 34-46).

However, Yoshino et al. fail to disclose of such adjustment being a compression unit that compresses a plurality of dynamic ranges of the sound signals to a predetermined value or below. But, Grimani disclose of such a compression unit that compresses a plurality of dynamic ranges of the sound signals to a predetermined value or below (fig.2 (2); col.3 line 35-55) for the purpose of detecting the condition of the main channel and creating the desired sound effect. Thus, it would have been obvious for one of the ordinary skill in the art to have modified Yoshino with a compression unit that compresses a plurality of dynamic ranges of the sound signals to a predetermined value or below for the purpose of detecting the condition of the main channel and creating the desired sound effect.

The combined teaching of Yoshino and Grimani as a whole, further disclose of outputting a plurality of sound signal after the dynamic ranges are compressed (fig.2 (2)) and an array speaker unit having a plurality of speaker units and a delay circuit for each of the plurality of sound signals output from the compression unit (fig.3 (DLY1-DLY8, FL-SBL); col.5 line 5-10; col.6 line 20-25), and a directivity control circuit for controlling a delay setting for each of the delay circuits based on a desired focal position of a sound wave beam to be directed to and a position of each of the speaker units (fig.5C; col.9 line 31-45/control circuit so as to delay the channel signals so that they may simultaneously focus the sound wave beam toward the listener and inherently such delay is based on the position of the speaker, since the audio is delay partly based on the speaker position to the listener), and wherein each of the speaker units receives a predetermined set delay from one of the delay circuits to emit a plurality of sounds from the speaker units in accordance with the sound signals output from the compression unit in different directivities (fig.5C; col.9 line 35-40/sound is delayed according to the adjusted signal in different directivity with the disclosed compression).

5. Claims 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshino et al. (US 7054448 B2) and Aylward (US 6240189 B1).

Re claim 7, Yoshino et al. disclose of the audio output apparatus comprising: a measuring circuit that measures levels of a plurality of input sound signals and a sound level adjusting circuit that adjusts the levels of the sound signals based on the measured signal ((fig.5B (12); col.8 line 34-46/the signal is measured and adjusted).

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However, Yoshino et al. fail to disclose of having a gain control circuit that refers the levels measured by the measuring circuit and sets a gain coefficient to each of the sound signal and a sound level adjusting circuit that adjusts the levels of the sound signals based on the set gain coefficient. But, Aylward disclose of a gain control circuit that refers the levels measured by the measuring circuit and sets a gain coefficient to each of the sound signal and a sound level adjusting circuit that adjusts the levels of the sound signals based on the set gain coefficient (fig.2-4 (12, 24, 26, 28)); col.4 line 10-15; col. 5 line 25-36;) for the purpose of producing a modified adjustable gain signal. thus, it would have been obvious for one of the ordinary skill in the art to have modified the combination with incorporating the with gain control circuit that refers the levels measured by the measuring circuit and sets a gain coefficient to each of the sound signal and a sound level adjusting circuit that adjusts the levels of the sound signals based on the set gain coefficient for the purpose of producing a modified adjustable gain signal.

The combined teaching of Yoshino et al. and Aylward as a whole, disclose of such an array speaker unit having a plurality of speaker units and a delay circuit for each of the adjusted sound signals (fig.3 (DLY1-DLY8, FL-SBL); col.5 line 5-10; col.6 line 20-25) and a directivity control circuit for controlling a delay setting for each of the delay circuits based on a desired focal position of a sound wave beam to be directed to and a position of each of the speaker units (fig.5C; col.9 line 31-45/control circuit so as to delay the channel signals so that they may simultaneously focus the sound wave beam toward the listener and inherently such delay is based on the position of the speaker, since the audio is delay partly based on the speaker position to the listener), wherein each of the speaker units receives a predetermined set delay from one of the delay circuits to emit a plurality of

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sounds from the speaker units in accordance with the adjusted sound signals in different directivities (fig.5C; col.9 line 35-40/sound is delayed according to the adjusted signal in different directivity as per speaker location).

Re claim 8, the audio output apparatus according to claim 7, wherein the gain control unit sets the gain coefficient so that the plurality of the levels of the sound signals inputted is nearly equal to each other (col.8 line 8-10; fig.5/sound to be adjusted so as to be equal to each other).

Re claim 9, the audio output apparatus according to claim 7, wherein the gain control unit includes an offset generating circuit which adds a certain amount of an offset amount to at least one level among the levels measured by the measuring circuit (fig.3 (ATG); col.8 line 35-40/amplify to correct the level).

Re claim 10, the audio output apparatus according to claim 7, wherein the gain control unit sets the gain coefficients so that dynamic ranges of the sound signals input to the array speakers unit are made to have a predetermined value or below (fig.8 (s15); fig.5B; gain to have a predetermined value).

Re claim 11, the audio output apparatus according to claim 7, further comprising a band pass filter to which a plurality of sound signals is

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inputted and which limits a frequency band of the sound signal (fig.5A (11a); col.7 line 28-30).

Re claim 12, the audio output apparatus according to claim 11 with the measuring unit, However, combined teaching of Yoshino et al. and Aylward as a whole, failed to disclosed of wherein the sound signal limited in the frequency band by the band pass filter is outputted to the measuring circuit.

But, it is noted it would have been obvious for one of the ordinary skill in the art to have combined the measuring unit with the band pass filter so as to have the sound signal limited in the frequency band by the band pass filter is outputted to the measuring circuit so as to expectedly have the attenuated input signal for a selected frequency band signal.

Re claim 13, the audio output apparatus according to claim 11, with the adjusting circuit, However, combined teaching of Yoshino et al. and Aylward as a whole, failed to disclosed of wherein the sound signal limited in the frequency band by the band pass filter is outputted to the sound level adjusting circuit.

But, it is noted it would have been obvious for one of the ordinary skill in the art to have combined the adjusting circuit with the band pass filter so as to have the sound signal limited in the

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frequency band by the band pass filter is outputted to the adjusting circuit so as to expectedly have the attenuated input signal for a selected frequency band signal.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DISLER PAUL whose telephone number is (571)270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2615

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614